CLAIMS

1. A filter for filtering intravenous fluid comprising:

a) a base member having an outer perimeter, one or more vent holes and a fluid inlet chamber;

b) a cap member having an outer perimeter, an inlet, an outlet and a fluid outlet chamber;

c) generally planar hydrophilic filtration media mounted between the base member and the cap member, separating the inlet chamber and the outlet chamber;

d) the perimeters of the base and cap members being sealed together to form a filter housing, and the filter having a flow path such that fluid passing into the filter housing through the inlet passes through the hydrophilic filtration media before passing out the outlet;

e) one piece of hydrophobic vent media positioned over the one or more vent holes and secured to the base member; and

f) the base member having a center section and side sections forming the inlet chamber, the side sections extending from the center section towards the perimeter of the base member and being formed at an angle of between about 2° and about 45° compared to the plane of the hydrophilic filtration media so as to encourage any air in the inlet chamber to flow towards the vent.

2. The filter of claim 1 wherein the base member has a shoulder inside of the perimeter which clamps against the hydrophilic filtration media when the base and cap members are assembled, and a ledge inside of the shoulder, and wherein the side sections of the base member extend between the center section and the ledge.

3. The filter of claim 1 wherein the filter cap and base members each have a generally rectangular shape with two beveled corners, the beveled corners forming a generally triangular region.

4. The filter of claim 3 wherein the generally rectangular shape is formed of six sides, with two long sides each parallel to one another, and each having first and second ends, a first end side perpendicular to the two long sides and spanning between the first ends of the two long sides, and the generally triangular region being opposite to the first end side and made up of a short second end side and two angled sides each extending between the second end of one of the long sides and the second end side.

5. The filter of claim 3 wherein the vent hole is located on a center line parallel to the length of the base member and at approximately a point along the center line that is between the beginnings of the bevels on the corners.

6. The filter of claim 4 wherein there are three base member side sections, one formed adjacent the first end side and the other two each formed adjacent one of the long sides.

7. The filter of claim 1 wherein the vent hole is surrounded by a vent media securement shoulder against which the hydrophobic vent medium is secured.

8. The filter of claim 7 wherein the fluid inlet chamber extends only on a first side of the vent media securement shoulder, the base member having an elevation of a second side of the vent media securement shoulder such that the base member elevation fits against the cap member, thereby preventing fluid from flowing into the filter housing on the second side of the vent media securement shoulder.

9. The filter of claim 8 wherein the vent media securement shoulder is circular in shape.

10. The filter of claim 7 wherein the vent media securement shoulder further comprises a plurality of locating ribs configured to help center the hydrophobic vent media over the vent hole during assembly of the filter.

11. The filter of claim 1 wherein the vent hole is positioned generally opposite the inlet.

12. In a filter for filtering intravenous fluid having a base member and a cap member sealed together to form a filter housing, hydrophilic filtration media secured within the housing, the hydrophilic filtration media separating the filter housing into a fluid inlet chamber and a fluid outlet chamber, the filter housing having an inlet and an outlet in fluid communication with the inlet chamber and outlet chamber respectively, the housing being generally flat and rectangular, and the housing being vented through hydrophobic vent media, the improvement comprising:

a) an inlet chamber having only one vent, and

b) the base member having sloped walls on interior surfaces providing the inlet chamber with a contoured shape to encourage any air within the inlet chamber to flow toward the vent.

13. The improved filter of claim 12 wherein the inlet chamber is generally rectangular in shape and the one vent is located at one end of the inlet chamber.

14. The improved filter of claim 12 wherein the one vent is located in the base member opposite to the inlet into the filter housing.

15. The improved filter of claim 12 wherein the housing forming the fluid outlet chamber includes a plurality of ribs extending generally parallel with the long side of the rectangular housing.

16. The improved filter of claim 15 wherein the ribs of an average spacing of at least 1 mm between them.

17. The improved filter of claim 12 wherein the ratio of the weight of the filter to the surface area of the hydrophobic filtration media is less than about 6 grams/in^2.

18. The filter of claim 1 wherein the inlet tubing connector faces the first end of the filter housing and the outlet tubing connector faces the second end of the filter housing.

19. The filter of claim 1 wherein the tubing connectors are in line with one another.

20. The filter of claim 1 wherein the tubing connectors are spaced inwardly of the first and second ends of the housing.